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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,151	07/15/2003	Matthew A. Kliesner	72206	8500

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EXAMINER	
TRAN, KHANH C	
ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/620,151	KLIESNER ET AL.	
	Examiner	Art Unit	
	Khanh Tran	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Amendment filed on 12/28/2000 has been entered. Claims 1-15 are pending in this Office action.

Response to Arguments

2. Applicant's arguments, see Applicants' Remarks on pages 2-3, filed on 12/28/2006, with respect to the rejection(s) of claim(s) 1-4, 6-9 and 11-14 under 35 U.S.C 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ozkan U.S. Patent 5,488,641.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 6-9, 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ozkan U.S. Patent 5,488,641.

Regarding claim 1, in column 3 line 55 via column 4 line15, Ozkan teaches in FIG. 2 a digital phase locked loop for receiving a local clock signal having a frequency

f_0. The digital phase locked loop further includes phase alignment circuitry comprising a delay line comprised of a chain of delay elements in the form of 2n inverters 210 serially connected to create n taps each providing a signal exhibiting one unit of delay. Each input line of an n to 1 multiplexer 220 is coupled to a respective tap of the delay line to receive a respective delayed signal. An up/down counter 230 is coupled to the multiplexer 220 to provide select control signals for selecting one of the n delayed signals as a recovered clock signal.

A phase comparator 240 *compares the phase relationship between the recovered clock signal and an input data signal* and generates a difference signal fed to the up/down counter 230 which changes its counted value in response to the difference signal. The recovered clock signal corresponds to the claimed output clock signal.

Regarding claims 2, in column 4 lines 1-15, Ozkan further discloses that the phase comparator 240 compares the phase relationship between the recovered clock signal and an input data signal and generates a difference signal fed to the up/down counter 230 which changes its counted value in response to the difference signal. The frequency of the recovered clock signal over time may be higher or lower in frequency than f_0. In view of the foregoing disclosure, in response to the difference signal, an output of the delay line provides later-in-time delay relative to the previous output of the delay line when the frequency of recovered clock signal is lower than the frequency of the local clock signal; see also column 4; line 60 via column 5 line 7.

Regarding claim 3, the rejection argument is very similar to claim 2 rejection. In this case, in response to the difference signal, an output of the delay line provides earlier-in-time delay relative to the previous output of the delay line when the frequency of recovered clock signal is higher than the frequency of the local clock signal.

Regarding claim 4, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 6, claim is rejected on the same ground as for claim 1 because of similar scope. Furthermore, FIG. 2 further discloses a multiplexer 220 and an up/down counter 230 corresponding to the claimed control circuit.

Regarding claim 7, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 8, claim is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 9, claim is rejected on the same ground as for claim 4 because of similar scope.

Regarding claim 11, claim is rejected on the same ground as for claim 1 because of similar scope. Furthermore, phase comparator 240, up/down counter 230, output of the recovered clock signal form the control loop as taught in Ozkan invention.

Regarding claim 12, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 13, claim is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 14, claim is rejected on the same ground as for claim 4 because of similar scope.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozkan U.S. Patent 5,488,641.

Regarding claim 5, Ozkan does not explicitly disclose the limitations "periodically, over an interval of plural cycles of said output clock, coupling another of said outputs of said multi-tap delay line ..." as claimed in the application claim.

In column 10 lines 20-60, Ozkan further teaches a method of generating recovered clock signals comprising the steps of *measuring the smallest quantity of delay units to provide at least a 360 degrees phase shift* between the local clock signal and the recovered clock signal and loading the counter in the selecting means with a value corresponding to the measured quantity of delay units when the output signal indicates that the local clock signal and the recovered clock signal are substantially phase-aligned. The selecting means includes a counter responsive to said difference signal from the comparing means for providing tap select control signals and a multiplexer responsive to the tap select control signals and connected to the taps of the delay line to provide the recovered clock signal from a tap selected in accordance with the tap select control signals.

Because 360 degrees phase shift is equivalent to one period of the recovered clock signal and because the step of loading the counter in the selecting means with a value corresponding to the measured quantity of delay units when the output signal indicates that the local clock signal and the recovered clock signal are substantially phase-aligned could occur after several periods of the local clock signal, one of ordinary skill in the art at the time the invention was made would have recognized that the method could, periodically over a few cycles of the recovered clock signal, load the

counter in the selecting means with a value corresponding to the measured quantity of delay units.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Vergnes et al. U.S. Patent 5,977,805 discloses "Frequency Synthesis Circuit Tuned By Digital Words".

Long U.S. Patent 5,081,655 discloses "Digital Phase Aligner And Method For Its Operation.

Ferraiolo et al. U.S. Patent 5,185,768 discloses "Digital Integrating Clock Extractor".

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

Khanh Tran

03/07/2007
Khanh Tran
Primary Examiner, AU 2611